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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Gfeller et al.

SERIAL NO.:

ART UNIT:

FILED: Herewith

EXAMINER:

TITLE: APPARATUS AND METHOD FOR DETERMINING A PULSE POSITION

FOR A SIGNAL ENCODED BY A PULSE MODULATION

ATTORNEY DOCKET NO.: CH92000-0040US1/954-010306-US (PAR)

Assistant Commissioner For Patents

Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Prior to examination, please amend the application as follows:

IN THE CLAIMS:

Cancel claims 20 and 21.

Please amend claims 18 and 19 as rewritten below:

18. (Amended) A receiving method comprising: determining the quality of at least two digital signals (S), by

sampling each digital signal (S) with a number n of samples per defined pulse width, whereby $n \geq 1$;

detecting an edge of a pulse of each sampled component;

counting the clock cycles between edges;

comparing the counted clock cycles (EEC) with a prestored reference-value (EEC_0) in order to output a deviation value (RJ) as a measure for the instantaneous quality of each digital signal (S);

feeding the deviation value (RJ) to an absolute-value limiter unit (42) that provides an absolute deviation value (LPJ) and feeding the absolute deviation value (LPJ) to a storage latch (43) that outputs the absolute deviation value (PJ);

feeding the absolute deviation value (PJ) to a leaky integrator (50) that outputs a signal quality measure (J);

detecting from the at least two digital signals the signal with the best signal quality measure (PCS) and the second-best signal quality measure (DCS) and defining them as the first component (PCS) and the second component (DCS);

selecting the first component (PCS) and the second component (DCS); and

accessing a probability table (110) for providing a value (DDS) representative of the pulse position in response to

receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS).

19. (Amended) A receiver system (80) comprising:

an apparatus (101) for determining a pulse position for a signal encoded by pulse modulation, the signal comprising a first component (PCS) and a second component (DCS), the apparatus including a determination unit (118) comprising a probability table (110) for providing a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS); and

a channel multiplexer (70) for determining the quality of at least two components (S), the channel multiplexer (70) comprising

a sampler (10) using clock cycles (CLK) for sampling of one of the at least two digital signals (S) with a number n of samples per defined pulse width, whereby $n \geq 1$;

an edge detector (20) for detecting an edge of a pulse of each sampled digital signal;

a counter (30) for counting the clock cycles between edges detected by the edge detector;

a deviation detector (40) being able to compare the counted clock cycles (EEC) with a prestored reference-value (EEC_0) in order to provide a deviation value (RJ) as a measure for the instantaneous quality of the digital signal (S);

a minimum-maximum detector (72) for detecting from the at least two digital signals the signal with the best signal quality measure (PCS) and the second-best signal quality measure (DCS) and defining them as the first component (PCS) and the second component (DCS); and

a diversity multiplexer (74) for selecting the first component (PCS) and the second component (DCS), these components (PCS, DCS) being feedable as input to the apparatus (101).

Please add new claims 22 and 23 as follows:

22. (New) A computer program comprising program code means for performing, when said program is run on a computer, a method for determining a pulse position for a signal encoded by pulse modulation, the signal comprising a first component (PCS) and a second component (DCS), the method comprising the step of:

providing, via a probability table (110), a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS).

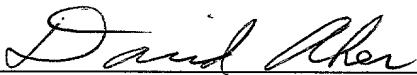
23. (New) A computer program product comprising program code means stored on a computer readable medium for performing, when said program product is run on a computer, a method for determining a pulse position for a signal encoded by pulse modulation, the signal comprising a first component (PCS) and a second component (DCS), the method comprising the step of:

providing, via a probability table (110), a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS).

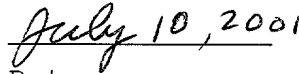
REMARKS

By amendment herein, the claims have been clarified in that claims 20 and 21 are replaced by claims 22 and 23. Further, all multiple dependencies have been removed from the claims.

Respectfully submitted,



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Date

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APPENDIX

Marked Up Claims

18. (Amended) A receiving method comprising: determining the quality of at least two digital signals (S), by

sampling each digital signal (S) with a number n of samples per defined pulse width, whereby $n \geq 1$;

detecting an edge of a pulse of each sampled component;

counting the clock cycles between edges;

comparing the counted clock cycles (EEC) with a prestored reference-value (EEC_0) in order to output a deviation value (RJ) as a measure for the instantaneous quality of each digital signal (S);

feeding the deviation value (RJ) to an absolute-value limiter unit (42) that provides an absolute deviation value (LPJ) and feeding the absolute deviation value (LPJ) to a storage latch (43) that outputs the absolute deviation value (PJ);

feeding the absolute deviation value (PJ) to a leaky integrator (50) that outputs a signal quality measure (J);

detecting from the at least two digital signals the signal with the best signal quality measure (PCS) and the

second-best signal quality measure (DCS) and defining them as the first component (PCS) and the second component (DCS);

selecting the first component (PCS) and the second component (DCS); and

[determining the pulse position as claimed in claim 15]

accessing a probability table (110) for providing a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS).

19. (Amended) A receiver system (80) comprising:

an apparatus (101) for determining a pulse position for a signal encoded by pulse modulation, the signal comprising a first component (PCS) and a second component (DCS), the apparatus including a determination unit (118) comprising a probability table (110) for providing a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS); [according to one of the preceding claims 1 to 15]
and

a channel multiplexer (70) for determining the quality of at least two components (S), the channel multiplexer (70) comprising

a sampler (10) using clock cycles (CLK) for sampling of one of the at least two digital signals (S) with a number n of samples per defined pulse width, whereby $n \geq 1$;

an edge detector (20) for detecting an edge of a pulse of each sampled digital signal;

a counter (30) for counting the clock cycles between edges detected by the edge detector;

a deviation detector (40) being able to compare the counted clock cycles (EEC) with a prestored reference-value (EEC_0) in order to provide a deviation value (RJ) as a measure for the instantaneous quality of the digital signal (S);

a minimum-maximum detector (72) for detecting from the at least two digital signals the signal with the best signal quality measure (PCS) and the second-best signal quality measure (DCS) and defining them as the first component (PCS) and the second component (DCS); and

a diversity multiplexer (74) for selecting the first component (PCS) and the second component (DCS), these components (PCS, DCS) being feedable as input to the apparatus (101).